replacing "at" with "further" in the last line.

Claim 31 has been amended, with respect to form, by replacing the first "of" by "relating" in line 5.

Claim Rejections - 35 USC §102

Claims 14-16, 18, 21-24, 26, 28, 32 and 33 were rejected under 35 USC 102(b) as being anticipated by U.S. Patent 6,203,659 to Shen.

The invention of Shen et al. is directed toward monitoring the quality of a photoresist stripper solution by detecting photoresist materials that accumulate in the stripper solution. Such stripper solutions are used to completely strip portions of photoresist films in patterned areas on semiconductor (silicon) wafers as part of processes used to form printed circuitry on semiconductor wafers. In the Shen et al. invention, absorption of infrared (IR) radiation by the stripper solution in the wavelength range 2000 – 15000 nm (column 2, lines 3-7) is used to detect photoresist materials, which are organic materials containing organic bonds that absorb infrared radiation (column 4, lines 17-23) in this wavelength range. According to Shen et al., the relative intensity of infrared radiation passing through the stripper solution is compared to a threshold value, and an alarm is sounded if this intensity falls below a predetermined threshold value (column 2, lines 46-49). In this case, the stripper solution is filtered to remove accumulated photoresist materials. Note that photoresist stripping is self-limiting (stops when all of the photoresist film within the exposed pattern area is removed) so that accurate measurement of the photoresist stripping rate is practically unimportant.

In contrast, the instant invention is directed toward controlling the etch rate for an etchant solution used to etch a solid (such as a semiconductor wafer) not a photoresist material (which is in the form of a film applied to a solid). In the instant invention, a near infrared (NIR) absorption spectrum for the etchant solution is measured in the 700 – 2500 nm wavelength range and is preferably subjected to chemometric analysis to determine the etch rate of the solid, which may depend on the combined effects of various etchant species. For example, etching of silicon wafers in hydrofluoric acid etchants is provided by HF, F^-, HF_2^-, H^+ and OH^- species that exist in equilibrium in the etchant solution. In this case, the etch rate may be increased by adding etchant (HF, for example), or decreased by diluting the etchant solution with water.